### Remarks

The preceding amendment and following remarks are submitted in response to the Final Office Action of the Examiner mailed February 19, 2003, setting a three-month shortened statutory period for response ending May 19, 2003. Claims 1, 3-8, 15-18, 20-23, 26-27, 29-35 remain pending, and claims 2, 9, 10-14, 19, 24-25, 28 and 36-44 have been canceled without prejudice. Entry of this amendment, reconsideration, and allowance of all pending claims are respectfully requested.

The undersigned contacted the Examiner several times, attempting to schedule a telephonic interview. However, the Examiner was unable to obtaining the file at the USPTO before the filing of this response. Applicants respectfully request that the Examiner consider a telephonic interview with the undersigned once the file is obtained, even after the filing of this Amendment.

In paragraph 20 of the Final Office Action, the Examiner acknowledged receipt of the references that were not provided with the prior 1449. However, the Examiner states that no new FORM-1449 was provided, and thus a signed copy cannot be provided to Applicants. Please find enclosed a new FORM-1449 for the Examiner's initials and signature. Applicants respectfully request that the Examiner provide an initialed and signed copy of the enclosed FORM-1449 to Applicants in due course.

In paragraph 2 of the Final Office Action, the Examiner rejected claims 1 and 3-5 under 35 U.S.C. § 102(b) as being anticipated by Johnson. With respect to claim 1, the Examiner states that Johnson shows (citing Figure 16, column 10, line 30) a layer 50, which is patterned, on layer 21, which is the upper mirror layer, and second layer 160 fills the pattern and covers the pattern. The Examiner also states, apparently referring to Figure 15 of Johnson, that layer 60 is part of

layer 50 and is immediately adjacent (citing column 10, line 31). Applicants note that layer 60 is not labeled in Figure 16 of Johnson.

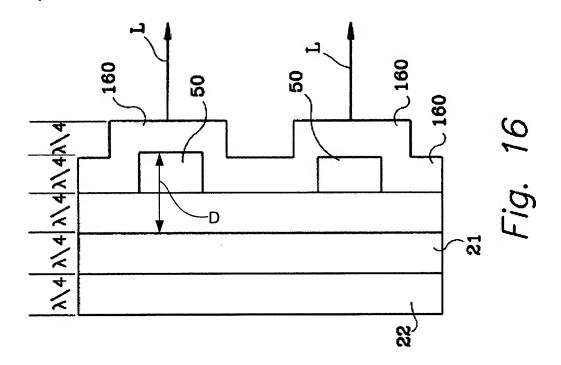
To further clarify the invention, claim 1 has been amended as follows:

1. (Presently Amended) A resonant reflector for an optoelectronic device tuned to a wavelength, the resonant reflector comprising:

a first material layer having a thickness of an odd multiple of a quarter of the wavelength and also having a first refractive index, the first material layer having one or more patterned regions that extend down into the first material layer thus reducing the thickness of the first material layer in the one or more patterned regions, selected patterned regions being filled with a second material having a second refractive index, the first refractive index being less than the second refractive index; and

a third layer positioned immediately adjacent the first material layer, the third layer having a third refractive index that is greater than the first refractive index.

(Emphasis Added). Figures 15-16 of Johnson do not appear to suggest a first material layer that has a thickness of an odd multiple of a quarter of the wavelength, wherein the first material layer has one or more patterned regions that extend down into the first material layer thus reducing the thickness of the first material layer in the one or more patterned regions. Figure 16 of Johnson is reproduced below for the Examiner's convenience, with an arrow labeled "D" showing the thickness of layer 50 and, according to the Examiner, layer 60 (not labeled in Figure 16, but shown in Figure 15). The Examiner states that "layer 60 is part of layer 50" and is immediately adjacent.



Assuming layer 60 is part of layer 50, as the Examiner suggests, and both layers 50/60 correspond to the first material layer of claim 1, the thickness "D" of layers 50/60 is an even multiple of a quarter of the wavelength, and not an odd multiple as recited in claim 1. As such, this interpretation of Johnson cannot render claim 1 unpatentable. Even assuming only layer 50 corresponds to the first material layer of claim 1, then Figure 16 of Johnson would not appear to show a third layer positioned immediately adjacent the first material layer, wherein the third layer has a third refractive index that is greater than the first refractive index, as recited in claim 1, particularly since according to the Examiner, layers 50 and 60 are made from the same material. In view of the foregoing, Applicant believes that claim 1 is clearly patentable over Johnson. For similar and other reasons, dependent claims 3-8 are also believed to be clearly patentable over Johnson.

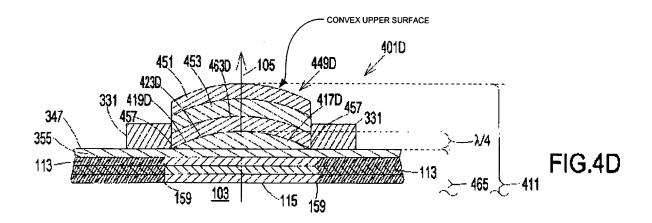
In paragraph 8 of the Office Action, the Examiner rejected claims 34-35 under 35 U.S.C. § 102(b) as being anticipated by Corzine et al. With respect to claim 34, the Examiner states that

Corzine et al. shows a resonant reflector (citing Figure 4D and column 13, line 52 et seq.) 419D, 451 and 453 across an optical cavity where the index is different for the layers, and the layers coextend along an interface and the interfaces are not parallel to the optical axis. To further clarify the invention, claim 34 has been amended to recite:

34. (Previously Amended) A resonant reflector for an optoelectronic device that has an optical cavity with an optical axis, the resonant reflector comprising:

a resonant reflector layer having defined by two substantially planar opposing surfaces extending across at least part of the optical cavity of the optoelectronic device, the resonant reflector layer having a first region with a first refractive index and a second region with a second refractive index, the first region and the second region co-extending along an interface, at least part of the interface being not parallel to the optical axis.

As can be seen, claim 34 has been amended to recite that the resonant reflector layer is defined by two substantially <u>planar opposing surfaces</u> that extend across at least part of the optical cavity (Emphasis Added). Nothing in Corzine et al. appears to suggest this limitation. Instead, it appears that Corzine et al. suggest providing a <u>non-planar</u> upper surface (i.e. concave or convex), as shown in, for example, Figures 1A, 1B, 2, 3A-3B, 4A-4D, 7A-7J. To illustrate this further, Figure 4D of Corzine et al. is reproduced below, with the upper convex surface identified.



In view of the foregoing, Applicants believe that claim 34 is clearly patentable over Corzine et

al. For similar and other reasons, Applicants believe that dependent claim 35 is also clearly

patentable over Corzine et al.

In paragraph 16 of the Final Office Action, the Examiner indicated that claim 6 is

objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening claims.

Because claim 1 is believed to be clearly in condition for allowance, claim 6 is also believed to

be in condition for allowance.

In paragraph 18 of the Final Office Action, the Examiner indicated that claims 15-18, 20-

23, 26, 27 and 29-33 are allowed.

In view of the foregoing, it is respectfully submitted that all pending claims 1, 3-8, 15-18,

20-23, 26-27, 29-35 are now in condition for allowance. Issuance of a Notice of Allowance in

due course is respectfully requested. If a telephone conference might be of assistance, please

contact the undersigned attorney at (612) 677-9050.

Respectfully submitted,

Robert A Morgan et al.

By their attorne

Dated: May 16, 2003

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FORM PTO-1449	Atty. Docket No.: 1100.1114101 (H16-26549)	Serial No.: 09/751,423	
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION	Applicant: Robert A. Morgan et al.		
MAY 1 6 2003 DISCLOSURE STATEMENT	Filing Date	Group Art:	
MAI 10 224 E	December 29, 2000	2872	

U.S. PATENT DOCUMENTS

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Examiner Initial	Document No.	Date	Name	Class	Sub Class	Filing Date If Appropriate
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# Atty. Docket No.: 1100.1114101 (H16-26549) Applicant: Robert A. Morgan et al. Applicant: Serial No.: 09/751,423 Applicant: Robert A. Morgan et al. Filing Date Group Art:

December 29, 2000

2872

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5,337,074	08/09/1994	Thornton	346	107R	
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5,351,256	09/27/1994	Schneider et al.	372	45	
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5,363,397	11/08/1994	Collins et al.	372	92	1 CC
5,373,520	12/13/1994	Shoji et al.	372	45	THE THE
5,404,373	04/04/1995	Cheng	372	50	0E1
5,416,044	05/16/1995	Chino et al.	437	129	23
5,428,634	06/27/1995	Bryan et al.	372	45	269
5,446,754	08/29/1995	Jewell et al.	372	50	<u> </u>
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**EXAMINER:** 

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### **FORM PTO-1449** Atty. Docket No.: Serial No.: 1100.1114101 (H16-26549) 09/751,423 Applicant: Robert A. Morgan et al. APPLICANT'S INFORMATION OF PATENTS AND PUBLICATIONS FOR PUBLICATION Filing Date Group Art: December 29, 2000 2872

Examii Initia	ner	Document No.	Date	Name	Class	Sub Class	Filing Date If Appropriate
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	BZ	5,818,066	10/06/1998	Duboz	257	21	
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FORM	I PTO	)-1449 <sub>.</sub>	Atty. Docket No.: Serial No.: 1100.1114101 (H16-26549) 09/751,423				
			Applicant: Robert A. Morga	an et al.			
O D	ج کتا_ون	F PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION					
MN 1 F	2003	APPLICANT'S INFORMATION DISCLOSURE STATEMENT	Filing Date	Group Art:			
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449	Atty. Docket No.: 1100.1114101 (H16-26549)	Serial No.: 09/751,423	
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION	Applicant: Robert A. Morgan et al.		
DISCLOSURE STATEMENT	Filing Date	Group Art:	
MAY 1 6 2013 15	December 29, 2000	2872	

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FORM PTO-1449	Atty. Docket No.: 1100.1114101 (H16-26549)	Serial No.: 09/751,423	
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION	Applicant: Robert A. Morgan et al.		
APPLICANT'S INFORMATION DISCLOSURE STATEMENT	Filing Date	Group Art:	
MAY 18 James 2	December 29, 2000	2872	
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AN	Morgan et al., "One Watt Vertical Cavity Surface Emitting Laser", <u>Electron. Lett.</u> , Vol. 29, No. 2, pp. 206-207, January 21, 1993

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FORM PTO-1449	Atty. Docket No.: 1100.1114101 (H16-2654	Serial No.: 9) 09/751,423
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